



1099466 - R8 SDMS

RECEIVED

MAR 09 2009

Office of Enforcement
Compliance & Environmental
Justice

Linda Jacobson (3 Copies)
RCRA Project Manager
US EPA Region VIII
8ENF-T
1595 Wynkoop Street
Denver, Colorado 80202-1129

March 6, 2009

SENT BY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

**CONSENT DECREE
CIVIL ACTION NO. CV 98-3-H-CCL
EAST HELENA SITE
WORK PERFORMED IN FEBRUARY 2009
PROGRESS REPORT #122**

Dear Ms. Jacobson:

On May 5, 1998, Asarco and the United States Environmental Protection Agency (EPA) entered into a Consent Decree (Decree) to further the objectives of the Resource Conservation and Recovery Act (RCRA) and the Clean Water Act (CWA). Section XI of the Decree (Reporting: Corrective Action) requires Asarco to submit certified monthly progress reports to EPA which discuss the actions taken by Asarco in achieving compliance with the Decree. The reports are to be submitted to EPA no later than the twentieth (20th) day of the following month. The following describes only those activities that have occurred or are related to projects performed during February 2009. The historical actions taken by Asarco in achieving compliance with the Decree are contained in previous monthly progress reports.

- a. **Describe the actions, progress, and status of projects which have been undertaken pursuant to Part VII of the Decree;**

2009 Cleaning and Demolition Work Plan

During February 2009, Asarco continued with development of the proposed 2009 cleaning and demolition work plan. On February 13, 2009, Asarco received the Montana Department of Environmental Quality (Department) February 12, 2009 letter, which 1) tabulates the process units, pollution control devices and storage units, and other areas required to be cleaned and demolished, 2) requests cost estimates associated with the demolition and maintenance (if not demolished) of the acid plant, sinter plant, and blast furnace stacks, 3) identifies the major components for inclusion in the work plan, and 4) agrees to a single work plan to addresses both the Administrative Order on Consent and applicable RCRA Consent Decree actions. On February 24, 2009, Asarco received EPA's February

19, 2009 letter, which 1) concurs with the Department's work plan preparation decision and 2) requests cost estimates specific to the RCRA Consent Decree actions. The requirements of both of these letters will be addressed in the 2009 Work Plan

On February 24, 2009, Asarco submitted a letter to the Department (with a copy to EPA) requesting written confirmation that the cost for development of the 2009 Cleaning and Demolition Work Plan qualify for credit under the prospective Custodial Trust Agreement.

RCRA Facility Investigation Phase 2 Characterization and Risk Assessment Work Plan

On February 9, 2009, Asarco received EPA's February 4, 2009 letter that requires submittal of a RCRA Facility Investigation Phase 2 Characterization and Risk Assessment Work Plan. EPA requires the Work Plan to be submitted 45 day after receipt of the February 4, 2009 letter, or no later than March 30, 2009. On February 19, 2008, Asarco communicate its receipt of EPA's February 9, 2009 letter and its desire to discuss EPA's work plan expectations. On February 24, 2009, Asarco provided EPA with a proposed agenda for a conference call to discuss questions relating to the work plan development. A conference call with Asarco and EPA is scheduled for March 10, 2009.

Interim Measures

On February 3, 2009, Asarco received EPA's January 28, 2009 letter that requires Asarco to submit an addendum to the groundwater interim measures work plan for the installation of additional groundwater monitoring wells. On February 26, 2009, Asarco submitted to EPA the 2009 Addendum to Interim Measures Work Plan, 2009 Supplemental Groundwater Investigation Report. On February 27, 2009, Asarco notified EPA (electronic mail) that the Report had been submitted. The Report included the 2006 through 2008 seasonal groundwater potentiometric maps, along with the water level elevations. Table 3-1 of the Report outlines the estimated costs to conduct the activities contained in the work plan, which Asarco expects to be credited against the prospective Custodial Trust Agreement.

On February 6, 2009, Asarco's submitted responses to the Montana Historic Preservation Officer's January 23, 2009 verbal comments to the 2008 Phase 1 Historic Recordation Report.

On February 20, 2009, Asarco submitted to EPA a Summary Report that describes the work performed under the 2008 Interim Measures Work Plan Addendum, Blast Furnace Flue and Monier Flue Cleaning and Demolition And Demolition Footprint Exposed Areas Soils Sampling (May 2008).

Corrective Action Management Unit (CAMU)

During February 2009, Asarco personnel continued to perform weekly inspections of the cell liner and surrounding areas to check for tears, sandbag placement,

anchor trench pullout, and fence conditions of the CAMU phase 2 cell. Hydrometrics personnel continued to monitor the leachate collection system as weather permitted. However, cold temperatures and slick liner conditions prevented pumping leachate from the CAMU phase 2 cell leachate collection system in February 2009. The leak detection sump continues to have zero flow, but will continue to be monitored and pumped, if necessary.

On February 3, 2009, Asarco responded to EPA's CAMU Phase 2 Cell leachate collection and leak detection system monitoring questions.

RI/FS Long-Term Monitoring Program

From February 2 through February 13, 2009, Hydrometrics personnel conducted the quarterly groundwater monitoring at the Asarco East Helena Plant. A total of 87 water samples were collected and submitted to Energy Laboratories for analyses of constituents outlined in Table B of the Updated Monitoring Program (February 2008). Monitoring well DH-9 was dry so no sample was collected. The total number of samples submitted to the lab includes 19 QA/QC samples (6-DI blanks, 6 rinsate blanks, and 7 duplicates). The access to monitoring wells EH-59 and EH-112 were covered by thick ice. Field personnel were able to remove the ice with a small jackhammer prior to collecting the required samples.

On February 11 2009, Asarco conducted the monthly sampling of select residential groundwater wells, as prescribed in the RI/FS Long-Term Monitoring Program (February 2008). In addition to the prescribed monthly samples, well water samples were also collected from John Simac's residence located at 2540 Wylie Drive. Copies of the February 2009 residential well notification letters along with the respective laboratory analytical reports have been attached to this monthly progress report.

A summary of the correspondence transmitted as part of the East Helena Consent Decree in February 2009 is included in Attachment 1.

- b. Identify any requirements under the Part VII of the Decree that were not completed in a timely manner, and problems or anticipated problem areas affecting compliance with the Decree;**

There were no requirements that were not completed in a timely manner nor were there problems or anticipated problem areas that may affect compliance with the Decree.

- c. Describe projects completed during the prior month, as well as activities scheduled for the next month;**

In accordance with the 1) 2006 Interim Measures Work Plan Addendum, Final Cleaning, Soil Sampling, Backfilling, and Interim Cap Work Plan and 2) 2006

Interim Measures Work Plan Addendum, Former Acid Plant Sediment Drying Area Slurry Wall, Monitoring, Operation, and Maintenance Work Plan, four areas in which interim caps have been installed are being inspected on a monthly basis. In December 2008, these monthly inspections were expanded to include areas in which above grade demolition activities were conducted under the 1) 2008 Interim Measures Work Plan and 2) 2008 Cleaning and Demolition Project Work Plan, with the most recent inspections occurring on February 4, 2009.

CAMU Landfill - In accordance with the July 2000 CAMU Design Analysis Report (Operation and Maintenance Plan), the CAMU is being inspected monthly with the last inspection occurring on January 3, 2009. The inspections of the CAMU Phase 2 cell temporary cover are being conducted on a weekly schedule. These monthly and weekly inspections documented that the CAMU Phase 1 and Phase 2 cell are operating as designed.

There are no field activities scheduled in March 2009 under the RI/FS long term monitoring program.

During March 2009, Asarco is scheduled to finalize the 2008 annual groundwater monitoring report, which will statistically evaluate the quarterly CAMU well samples in accordance with the CAMU Design Analysis Sampling and Monitoring Plan.

During March 2009, Asarco expects to finalize a draft of the proposed 2009 cleaning and demolition project work plan for submission to the Department and EPA. The schedule requires the Department's and EPA's review and approval of the work plan no later than April 1, 2009. Asarco and its contractors must commence the work plan project no later than May 1, 2009 so that the work plan requirements can be completed before October 31, 2009.

During March 2009, Asarco is scheduled to submit the RCRA Facility Investigation Phase 2 Characterization and Risk Assessment Work Plan. EPA requires the Work Plan to be submitted 45 day after receipt of the February 4, 2009 letter, or no later than March 30, 2009.

d. Describe and estimate the percentage of studies completed;

The Pump and Treat Pilot Scale Testing for Source Area Reduction of Groundwater Contamination is approximately 100% complete.

The jar testing (Phase I) of the East Helena PRB Materials Testing Program is 100% complete.

The slurry wall construction in the former acid plant sediment drying area is 100% complete. On July 24, 2008, Asarco submitted to EPA the Addendum to

Interim Measures Work Plan, Former Acid Plant Sediment Drying Wall, Monitoring, Operations, and Maintenance Report, Asarco East Helena Facility.

The interim capping project for the former acid plant sediment drying area, dross area, sinter plant area, gas cleaning section of the acid plant, thaw house, contact section of the acid plant, blast furnace baghouse, blast furnace flue, and Monier flue is 100% complete.

The revised January 2008 CAMU Phase 2 Cell Design Analyses is 100% complete, the CAMU Phase 2 Cell financial assurance is fully funded, and construction and 2008 waste placement within the CAMU Phase 2 cell is 100% complete.

The slurry wall construction in the former speiss-dross plant area is 100% complete. On September 18, 2008, Asarco submitted to EPA the Addendum to Interim Measures Work Plan, Speiss-Dross Area Slurry Wall, Monitoring, Operations, and Maintenance Report, Asarco East Helena Facility.

e. Describe and summarize all findings to date;

The details of past findings through January 2008 are described and summarized in previous monthly progress reports.

f. Describe actions being taken to address problems;

There were no other actions required to address problems associated with the Decree.

g. Identify changes in key personnel during the period;

There were no changes in key personnel during the period. Asarco continues to use the services of Hydrometrics Incorporated to perform the various activities required under the Consent Decree.

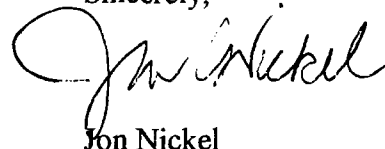
h. Include copies of the results of sampling and tests conducted and other data generated pursuant to work performed under Part VII of the Decree since the last Progress Report. Asarco may submit data that has been validated and confirmed by Asarco to supplement any prior submitted data. Updated validated and confirmed data shall be included with the RFI Report, if not delivered before;

One validation package entitled "*Validation Summary, Asarco East Helena Post RI/FS Long-Term Monitoring Program, East Helena Residential Groundwater, Inorganic Analyses, February 2009*" is attached to this monthly progress report.

- i. **Describe the status of financial assurance mechanisms, including whether any changes have occurred, or are expected to occur which might affect them, and the status of efforts to bring such mechanisms back into compliance with the requirements of this Decree.**

ASARCO filed a voluntary petition for relief under chapter 11 of Title 11 of the United States Bankruptcy Code in the Southern District of Texas on August 9, 2005. ASARCO hopes to use its chapter 11 bankruptcy proceeding to improve its financial position to the point where it can successfully reorganize and emerge from bankruptcy. ASARCO further hopes that at that time it will be in a position to make the required financial assurance demonstration. Asarco has established the necessary CAMU Phase 2 Cell financial assurance and has provided EPA with the complete executed original of the CAMU Trust Fund Agreement.

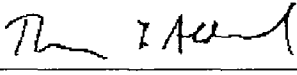
Sincerely,

A handwritten signature in cursive script, appearing to read "Jon Nickel".

Jon Nickel

CERTIFICATION
PURSUANT TO U.S. v ASARCO INCORPORATED
(CV-98-3-H-CCL, USDC, D. Montana)

I certify under penalty of law that this document, February 2009 Progress Report and all attachments, were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature 
Name: Thomas L. Aldrich
Title: Vice President Environmental Affairs
Date: March 4, 2009

CONSENT DECREE
 EAST HELENA SITE
 FEBRUARY 2009 PROGRESS REPORT
 SUMMARY OF CORRESPONDENCE
ATTACHMENT 1

DATE OF TRANSMITTAL	CORRESPONDENCE SENT FROM	CORRESPONDENCE SENT TO	SUBJECT	RESPONSE
February 3, 2009	Jon Nickel	Linda Jacobson	Response to CAMU Phase 2 Cell Leachate Collection and Leak Detection Systems	No Formal Response Required
February 24, 2009	Jon Nickel	Linda Jacobson	2009 Cleaning and Demolition Work Plan, Costs Qualify for Credit under the Prospective Custodial Trust Agreement	Written Confirmation From Department and EPA Required
February 6, 2009	Jon Nickel	Linda Jacobson	Responses to the Montana Historic Preservation Officer's Comments to the 2008 Phase 1 Historic Recordation Report	Written Approval from EPA Required
February 20, 2009	Jon Nickel	Linda Jacobson	Summary Report, 2008 Interim Measures Work Plan Addendum, Blast Furnace Flue and Monier Flue Cleaning and Demolition And Demolition Footprint Exposed Areas Soils Sampling	No Formal Response Required
February 26, 2009	Jon Nickel	Linda Jacobson	2009 Addendum to Interim Measures Work Plan, 2009 Supplemental Groundwater Investigation Report	Written Approval from EPA Required

Attached to This Monthly Progress Report	Jon Nickel	Linda Jacobson	Validation Summary, Asarco East Helena Post RI/FS Long- Term Monitoring Program, East Helena Residential Groundwater, Inorganic Analyses, February 2009 Sample Event	No Formal Response Required
--	------------	----------------	--	--------------------------------

VALIDATION SUMMARY
ASARCO EAST HELENA POST RI/FS LONG-TERM
MONITORING PROGRAM
EAST HELENA RESIDENTIAL GROUNDWATER
INORGANIC ANALYSES
FEBRUARY 2009 SAMPLE EVENT
(ENERGY LABORATORY WORK ORDER NO. H09020112)

Prepared for:
Mr. Jon Nickel
Asarco LLC
PO Box 1230
East Helena, MT 59635

Prepared by:
Linda L. Tangen
6900 Cherry Blossom Lane
Albuquerque, NM 87111

March 2009

TABLE OF CONTENTS

LIST OF APPENDICES	II
GLOSSARY OF TERMS.....	III
SUMMARY	1
1. INTRODUCTION.....	3
2. DELIVERABLES.....	3
3. FIELD PROCEDURES.....	4
4. FIELD BLANKS.....	4
5. FIELD DUPLICATES	5
6. LABORATORY PROCEDURES.....	5
7. DETECTION LIMITS.....	5
8. LABORATORY BLANKS	6
9. LABORATORY MATRIX SPIKES.....	6
10. LABORATORY DUPLICATES.....	6
11. LABORATORY CONTROL STANDARDS (LCS).....	7
12. INTERPARAMETER COMPARISON.....	7
13. HISTORICAL COMPARISON SUMMARY.....	8
14. DATA QUALITY OBJECTIVES (DQOS).....	8
15. CONCLUSION	9
REFERENCES.....	10

LIST OF APPENDICES

APPENDIX 1: DATABASE

APPENDIX 2: FIELD NOTES

APPENDIX 3: CHAIN OF CUSTODY

APPENDIX 4: LABORATORY REPORT

GLOSSARY OF TERMS

CLP.....	Contract Laboratory Program
COC.....	Chain of Custody
CRDL.....	Contract Required Detection Limit
DI.....	Deionized Water
DIS.....	Dissolved
DQO.....	Data Quality Objective
ELI-Hel	Energy Laboratories, Inc., Helena, Montana
EPA.....	U.S. Environmental Protection Agency
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
LCS.....	Laboratory Control Sample
LFB.....	Laboratory Fortified Blank
MS	Matrix Spike
NA	Not Applicable
PDLG.....	Project Detection Limit Goal
QC	Quality Control
RI/FS.....	Remedial Investigation/Feasibility Study
RPD	Relative Percent Difference
SC	Specific Conductivity
TDS	Total Dissolved Solids

SUMMARY

East Helena private well water (groundwater) samples were collected February 11, 2009 for the ASARCO East Helena Facility Post RI/FS Long-Term Monitoring sample event. Inorganic constituents for these samples were validated using U.S. Environmental Protection Agency (EPA) guidelines for data validation (EPA 2002) and the project work plan (ASARCO 2002 and 2007). Samples were analyzed by Energy Laboratories, Inc. (ELI-Hel) in Helena, Montana, under work order H09020112.

The validated database is located in Appendix 2. Field notes, chain of custody forms, and laboratory reports are located in Appendices 3, 4, and 5, respectively.

Data quality objectives for this project are as follows:

- **Precision** is determined by field and laboratory duplicate sample results that are within control limits. The completeness objective for precision is 90% of the duplicate sample results within control limits. **This objective was met as 100% of the field and laboratory duplicate results were within control limits.**
- **Accuracy** is determined by laboratory control sample (LCS) and matrix spike (MS) sample results that are within control limits. The completeness objective for accuracy is 90% of the LCS and MS sample results within control limits. **This objective was met as 100% of the LCS results and 100% of the MS results were within control limits.**

***Note:** Due to the lack of LCSs for dissolved metals, fortified laboratory blanks were used to assess the accuracy for these analytes. In several cases, samples used for matrix spikes for were from unknown sources and therefore, could not be used to evaluate the accuracy of this sampling event's data. This is explained further in the following report.

- **Completeness** is calculated by the number of valid (not rejected) data per number of planned data, expressed as a percentage. The completeness goal for this project was 90%. **This goal was met as 97.2% (106 out of 109 planned measurements) of the planned data were analyzed and deemed valid.**

Issues Associated with this Sampling Event

Due to instrument errors associated with the dissolved oxygen (DO) meter, DO measurements were not recorded for this sampling event. This omission resulted in the subtraction of three measurements from the project's total planned measurements.

Conclusion

The data collected in February 2009 for the ASARCO East Helena Post RI/FS Long Term Monitoring Program are deemed acceptable and can be used for the purposes they were intended. Of the measured results, **100% can be used without qualification.**

Data Validation Report by: Linda L. Tangen

Client Review: Jon Nickel

DATA VALIDATION REPORT

1. INTRODUCTION

- This validation applies to analyses for five groundwater and quality control samples collected on February 11, 2009 for the ASARCO East Helena Post RI/FS Long-Term Monitoring Program (ASARCO 2002 and 2007). Samples were analyzed by Energy Laboratories in Helena, Montana (ELI-Hel) under work order H09020112. One field blank and one field duplicate samples were included with these samples.
- Validation procedures used are generally consistent with:
 - ☒ EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganics Data Review (EPA 2002)
 - ☒ Work Plan – Interim Measures Work Plan Addendum (ASARCO 2002)
 - ☒ Post RI/FS Long-Term Monitoring Program (ASARCO 2007)
 - ☐ Other
- Overall level of validation:
 - ☐ CLP
 - ☒ Standard – Field and laboratory quality control (QC) samples are reviewed; and samples associated with QC violations are flagged.
 - ☐ Visual

2. DELIVERABLES

- All laboratory document deliverables were present as specified in the CLP-Statement of Work (EPA 2001), and/or the project contract.
 - ☒ Yes
 - ☐ No
- All documentation of field procedures was provided as required.
 - ☒ Yes
 - ☐ No
- Data entry for documents was accurate and complete.
 - ☒ Yes
 - ☐ No

3. FIELD PROCEDURES

- Samples were collected from all project-required sites.

☒ Yes - see notes
☐ No

Notes: All site owners were contacted according to the project requirements, however, a sample was not collected at 109 Gail because the well was winterized. An additional sample was collected at 2540 Wylie Drive by special request.

- Field parameters were measured in accordance with the project work plan.

☐ Yes
☒ No - see notes

Notes: Due to instrument errors associated with the dissolved oxygen (DO) meter, DO measurements were not recorded for this sampling event. This omission resulted in the subtraction of three measurements from the project's total planned measurements.

- Field instruments were calibrated daily and before measurements were collected.

☒ Yes
☐ No

- Chains of Custodies (COCs) were properly filled out and signed by the field personnel.

☒ Yes
☐ No

- Data entry into field books, on COCs, and on sample labels were accurate and complete.

☒ Yes
☐ No

4. FIELD BLANKS

Blanks: Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

Deionized water (DI), trip, rinsate, or any other field blanks have been carried out at the proper frequency (one rinsate blank and one DI blank per event).

☒ Yes
☐ No

Reported results on the field blanks were less than the Project Detection Limit Goals (PDLGs) or reporting limit.

☒ Yes
☐ No

5. FIELD DUPLICATES

Field duplicates have been collected at the proper frequency (one field duplicate per event).

☒ Yes
☐ No

Field duplicate relative percent differences (RPDs) were within the required control limits (RPD of 20% or less). If the sample or duplicate result is less or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within \pm the PDLG.

☒ Yes
☐ No

6. LABORATORY PROCEDURES

- **Laboratory procedures followed**

☒ CLP-Statement of Work (EPA 2001)
☐ SW-846 (EPA 1986)
☒ Methods for Chemical Analysis of Water and Wastes (EPA 1983)

- **Holding times met**

☒ Yes
☐ No

- **Consistency with project requirements**

Analyses were carried out as required by the project work plan (ASARCO 2002 and 2007).

☒ Yes
☐ No

Project specified methods were used.

☒ Yes
☐ No

7. DETECTION LIMITS

- **Reporting detection limits met PDLGs.**

☒ Yes
☐ No

8. LABORATORY BLANKS

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

- Method blanks were prepared and analyzed at the required frequency (one per batch or one per 20 samples, whichever is greater).

☒ Yes
☐ No

- All the analytes in the blank were less than the PDLG.

☒ Yes
☐ No

9. LABORATORY MATRIX SPIKES

- A Matrix Spike (MS) sample (pre-digestion) was analyzed at the proper frequency (one per batch and/or matrix).

☐ Yes
☒ No – see notes

Notes: Samples from unknown sources were used as the MS for dissolved arsenic, cadmium, copper, lead, and selenium. Therefore, inter-parameter interferences could not be evaluated for these analyses. The accuracy was measured by laboratory control sample (LCS) recoveries.

- MS recoveries were within the required control limits (75-125%).

☒ Yes
☐ No

10. LABORATORY DUPLICATES

- Laboratory duplicate samples were analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).

☒ Yes
☐ No

- RPDs were within the required control limits (RPD of 20% or less). If the sample or duplicate result is less or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within \pm the PDLG.

☒ Yes
☐ No

11. LABORATORY CONTROL STANDARDS (LCS)

Laboratory Fortified Blanks (LFBs) were used in lieu of LCS' for metal analyses. This is acceptable for the purpose of the project.

- The reference material used for the LCS or LFB was of the correct matrix.
☒ Yes
☐ No
- LCS' or LFBs were prepared and analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).
☒ Yes
☐ No
- LCS recoveries were within the required control limits (80-120% or certified range).
☒ Yes
☐ No

12. INTERPARAMETER COMPARISON

☒ Lab pH vs. Field pH
☒ Lab Specific Conductivity (SC) vs. Field SC
☒ Total Dissolved Solids (TDS) vs. Field SC

Lab pH vs. Field pH: Field and lab pH pairs were compared using laboratory duplicate criteria (refer to section 10). These comparisons were less than or equal to 11.1 RPD and therefore acceptable for the purposes of the project.

Lab SC vs. Field SC: Field and lab SC pairs were compared using laboratory duplicate criteria (refer to section 10). These comparisons were less than or equal to 28.6 RPD. Following is a summary of the sites with field and lab SC pairs greater than 20 RPD. Action was not taken on these data.

Site	Sample Code	Sample Date	Field SC (umhos/cm)	Lab SC (umhos/cm)	RPD	Action
203 Gail	EHR-0209-301	2/11/2009	198	264	28.6	None - Values in line with historical data.
2540 Wylie Dr	EHR-0209-303	2/11/2009	331	435	27.2	None - In line with other SC results.
401 Gail	EHR-0209-300	2/11/2009	530	699	27.5	None - Values in line with historical data.

TDS vs. Field SC: The ratio of TDS to field SC results should lie between 0.55 and 0.75. This ratio is intended to be a check on the accuracy of the TDS and lab SC measurements. In natural waters with high sulfate, the ratio may be much higher and the ratio is less accurate in dilute waters. TDS/SC ratios for this sampling event were from 0.72 to 0.77, which were in line with historical data.

13. HISTORICAL COMPARISON SUMMARY

Data for this sampling event were compared with sampling events from the previous five years (since January 2004). For this sampling event, none of the results was greater than three times the standard deviation from site's historical mean.

14. DATA QUALITY OBJECTIVES (DQOs)

- The data quality goal was met for precision (90% of the field and laboratory duplicates were within control limits).

☒ Yes – see the following table
☐ No

Precision Objectives

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
Field Duplicates	20	0	20	100.0%
Lab Duplicates	34	0	34	100.0%
Overall	54	0	54	100.0%

- The data quality goal was met for accuracy (90% of the LCS and matrix spike results were within control limits).

☒ Yes – see the following table
☐ No

Accuracy Objectives

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
LCS' and LFBs	21	0	21	100.0%
Matrix Spikes	22	0	22	100.0%
Overall	43	0	43	100.0%

- DQO target for completeness was met (the number of valid results divided by the number of possible results is 90% or above).

☒ Yes – see the table on the following page
☐ No

Completeness

# of Planned Measurements	Actual # of Measurements	# of Rejected Measurements	# of Valid Measurements	Completeness
109	106*	0	106	97.2%

*Three planned DO measurements were omitted from this sampling event. Refer to Section 3 for details.

- Samples were qualified for QC exceedances and deficiencies.

 Yes

 X No – see the following table

Qualification of Samples

# of Measurements	# of Qualified Measurements	# Not Qualified	% Not Qualified
109	0	109	100.0%

15. CONCLUSION

The data collected in February 2009 for the ASARCO East Helena Post RI/FS Long Term Monitoring Program are deemed acceptable and can be used for the purposes they were intended.

Data Validation Report by: Linda L. Tangen

Client Review by: Jon Nickel

REFERENCES

- ASARCO 2002. *Interim Measures Work Plan Addendum, East Helena Facility*. ASARCO Consulting Inc. Revised May.
- ASARCO 2007. *Post RI/FS Long-Term Monitoring Program*. ASARCO LLC. April.
- EPA 1983. *Methods for Chemical Analysis of Water and Wastes*. United States Environmental Protection Agency. March.
- EPA 1986. *Test Method for Evaluating Solid Waste: Physical/Chemical Methods 3rd Ed. 4 Vols*. United States Environmental Protection Agency. November.
- EPA 2001. *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis*. United States Environmental Protection Agency. Document Number ILM05.2. December.
- EPA 2002. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. United States Environmental Protection Agency. July.

APPENDIX 1

DATABASE

ANALYSES SUMMARY REPORT

East Helena Private Wells - February 2009 Data

Database: ASARCO, East Helena Plant

Table of Contents by Station Type

<u>Page</u>	<u>Station Type</u>	<u>Station Name</u>
1	Domestic Wells	203Gail
1	Domestic Wells	401Gail
1	Field Quality Control	FieldBlank
2	Groundwater	2540 Wylie

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 3/5/2009 9:12:00 AM

C:\EnviroDataDB\Databases\V5_B_DB\EastHelena.mdb

ANALYSES SUMMARY REPORT

East Helena Private Wells - February 2009 Data

Database: ASARCO, East Helena Plant

Table of Contents By Lab Sample ID

<u>Page</u>	<u>Lab Sample ID</u>	<u>Sample ID</u>	<u>Sample Date</u>	<u>Station Name</u>
1	H09020112-001	EHR-0209-300	2/11/2009	401Gail
1	H09020112-002	EHR-0209-301	2/11/2009	203Gail
1	H09020112-003	EHR-0209-302	2/11/2009	203Gail
2	H09020112-004	EHR-0209-303	2/11/2009	2540 Wylie
1	H09020112-005	EHR-0209-304	2/11/2009	FieldBlank

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 3/5/2009 9:12:00 AM

C:\EnviroDataDB\Databases\V5_B_DB\EastHelena.mdb

ANALYSES SUMMARY REPORT

East Helena Private Wells - February 2009 Data

Database: ASARCO, East Helena Plant

Table of Contents by Sample ID

<u>Page</u>	<u>Sample ID</u>	<u>Lab Sample ID</u>	<u>Sample Date</u>	<u>Station Name</u>
1	EHR-0209-300	H09020112-001	2/11/2009	401Gail
1	EHR-0209-301	H09020112-002	2/11/2009	203Gail
1	EHR-0209-302	H09020112-003	2/11/2009	203Gail
2	EHR-0209-303	H09020112-004	2/11/2009	2540 Wylie
1	EHR-0209-304	H09020112-005	2/11/2009	FieldBlank

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 3/5/2009 9:12:00 AM

C:\EnviroData\DB\Databases\V5_B_DB\EastHelena.mdb

ANALYSES SUMMARY REPORT

East Helena Private Wells - February 2009 Data

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	203Gail	203Gail	401Gail	Field Blank
Water	SAMPLE DATE	2/11/2009	2/11/2009	2/11/2009	2/11/2009
	SAMPLE TIME	08:30	09:00	08:00	11:30
	LAB	ELI	ELI	ELI	ELI
	LAB NUMBER	H09020112-002	H09020112-003	H09020112-001	H09020112-005
	SAMPLE NUMBER	EHR-0209-301	EHR-0209-302	EHR-0209-300	EHR-0209-304
	TYPE	Domestic Wells	Domestic Wells	Domestic Wells	Field QC
	GROUP	Private Wells	Private Wells	Private Wells	Private Wells
	DESCRIPTION				
	REMARKS		Field Duplicate		Blank
Common Ions (mg/L): ppm unless noted					
	Bicarbonate (HCO ₃)	94	97	150	<1
	Calcium (Ca) (DIS)	31	31	98	<1
	Chloride (Cl)	5	5	30	<1
	Magnesium (Mg) (DIS)	6	6	21	<1
	Potassium (K) (DIS)	3	3	6	<1
	Sodium (Na) (DIS)	13	13	25	<1
	Sulfate (SO ₄)	53	53	240	<1
	Total Alkalinity As CaCO ₃	77	79	130	<1
Metals (mg/L): ppm unless noted					
	Arsenic (As) (DIS)	<0.002	<0.002	0.003	<0.002
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	0.023	0.022	0.004	<0.004
	Iron (Fe) (DIS)	<0.02	<0.02	<0.02	<0.02
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	0.01	<0.01
	Selenium (Se) (DIS)	<0.005	<0.005	0.015	<0.005
	Zinc (Zn) (DIS)	<0.02	<0.02	0.04	<0.02
Physical/Fld-Lab: ppm unless noted					
	pH	7.3	7.3	7.4	5.6
	pH (Fld)	7.26		6.62	
	SC (umhos/cm at 25 C) (Fld)	198		530	
	SC (umhos/cm at 25 C)	264	262	699	1
	Total Suspended Solids	<10	<10	<10	<10
	TDS (Measured at 180 C)	191	190	553	<10
	Water Temperature (C) (Fld)	10.6		11.7	

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

East Helena Private Wells - February 2009 Data

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	2540 Wylie
Water	SAMPLE DATE	2/11/2009
	SAMPLE TIME	11:00
	LAB	ELI
	LAB NUMBER	H09020112-004
	SAMPLE NUMBER	EHR-0209-303
	TYPE	Groundwater
	GROUP	PRE
	DESCRIPTION	Special Sample
	REMARKS	

Common Ions (mg/L): ppm unless noted

Bicarbonate (HCO3)	150
Calcium (Ca) (DIS)	57
Chloride (Cl)	7
Magnesium (Mg) (DIS)	12
Potassium (K) (DIS)	5
Sodium (Na) (DIS)	17
Sulfate (SO4)	110
Total Alkalinity As CaCO3	120

Metals (mg/L): ppm unless noted

Arsenic (As) (DIS)	<0.002
Cadmium (Cd) (DIS)	<0.001
Copper (Cu) (DIS)	<0.004
Iron (Fe) (DIS)	<0.02
Lead (Pb) (DIS)	<0.005
Manganese (Mn) (DIS)	<0.01
Selenium (Se) (DIS)	<0.005
Zinc (Zn) (DIS)	0.02

Physical/Fid-Lab: ppm unless noted

pH	7.2
pH (Fid)	6.61
SC (umhos/cm at 25 C) (Fid)	331
SC (umhos/cm at 25 C)	435
Total Suspended Solids	<10
TDS (Measured at 180 C)	340
Water Temperature (C) (Fid)	8.3

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

APPENDIX 2
FIELD NOTES

FEBRUARY 11, 2009
MONTHLY RI/FS LONG-TERM
RESIDENTIAL WELL MONITORING

FIELD STANDARDIZATION OF HORIBA

	STANDARD VALUE	METER READING
ph	4.00 SU	4.00 SU
CONDUCTIVITY	4480 μ mhos/cm	4480 μ mhos/cm
SALINITY	0.23%	0.23%

THE HORIBA DISPLAYED A ASSUMED
OXYGEN SENSOR ERROR. NO D.O.
READINGS WERE OBTAINED DURING THE
SAMPLE EVENT

JENSEN

401 GAIL STREET

EHR-0209-300

SAMPLE COLLECTED FROM DETACHED
GARDEN SPIGOT AFTER 5 MINUTE
PURGE. DAVID JENSEN PRESENT

ph	6.62 SU
CONDUCTIVITY	530 μ mhos/cm
D.O.	NA
TEMP.	11.7 °C

FOLSEY

203 GAIL STREET

EHR-0209-301 ORIGINAL

EHR-0209-302 DUPLICATE

SAMPLE COLLECTED FROM LAWN
SPIGOT ON NORTH SIDE OF HOUSE
AFTER 5 MINUTE PURGE.

ph	7.26 SU
CONDUCTIVITY	198 μ mhos/cm
D.O.	NA
TEMP.	10.6 °C

SPECIAL SAMPLE

JOHN SIMAC

227-6507

2540 WYLLIE DRIVE

431-9315

P.O. BOX 59

EAST HELENA, MT 59635

EHR-0209-303

DRINKING WATER SAMPLE COLLECTED FROM
OUTSIDE SPIGOT ON EAST SIDE OF HOUSE
5 MINUTE PURGE. IRRIGATION WELL WATER
JOHN SIMAC PRESENT

ph	6.61 SU
CONDUCTIVITY	331 μ mhos/cm
D.O.	-
TEMP.	8.3 °C

NORDBROM IRRIGATION WELL WINTERIZED
NO SAMPLE

EHR-0209-304 FIELD BLANK

APPENDIX 3
CHAIN OF CUSTODIES

PLEASE PRINT- Provide as much information as possible.

Company Name: <div style="font-size: 1.2em; font-weight: bold;">ASARGO LLC</div>			Project Name, PWS, Permit, Etc.: PI/ESL015 - TERM RESIDENTIAL WELL MONITORING - FEB. 2017			Sample Origin State:		EPA/State Compliance: Yes <input type="checkbox"/> No <input type="checkbox"/>									
Report Mail Address: JUN NICKEL P.O. BOX 1230 EAST HELENA, MT 59635			Contact Name:		Phone/Fax:		Email:		Sampler: (Please Print) J. NICKEL								
Invoice Address:			Invoice Contact & Phone:				Purchase Order:		Quote/Bottle Order:								
Special Report/Formats - ELI must be notified prior to sample submittal for the following: <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> DW <input type="checkbox"/> GSA <input type="checkbox"/> POTW/WWTP <input type="checkbox"/> State: _____ <input type="checkbox"/> Other: _____ </div> <div> <input type="checkbox"/> A2LA <input type="checkbox"/> EDD/EDT (Electronic Data) Format: _____ <input type="checkbox"/> LEVEL IV <input type="checkbox"/> NELAC </div> </div>			Number of Containers Sample Type: A W S V B O Air Water Soils/Solids Vegetation Glossary Other		ANALYSIS REQUESTED				Contact ELI prior to RUSH sample submittal for charges and scheduling - See Instruction Page Comments:		Shipped by: <div style="font-size: 1.2em; font-weight: bold;">MAIL</div> Cooler ID(s):						
					<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> PHYSICAL PARAMETERS COMMON IONS METALS </div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> SEE ATTACHED Normal Turnaround (TAT) </div> </div>						Receipt Temp: <div style="font-size: 1.2em; font-weight: bold;">3.6 °C</div> On Ice: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>						
SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)			Collection Date	Collection Time	MATRIX					LABORATORY USE ONLY							
EHR-0209-301 RAW			2/11/17	8:00	GW												
EHR-0209-302 METAL				8:00													
EHR-0209-301 RAW				8:30													
EHR-0209-301 METAL				8:30													
EHR-0209-302 RAW				7:00													
EHR-0209-302 METAL				7:00													
EHR-0209-303 RAW				11:00													
EHR-0209-303 METAL				11:00													
EHR-0209-304 RAW				11:30													
EHR-0209-304 METAL				11:30													
Custody Record MUST be Signed			Relinquished by (print): J. Nickel		Date/Time: 2/11/17/15:15		Signature: 		Received by (print):		Date/Time:		Signature:				
			Relinquished by (print):		Date/Time:		Signature:		Received by (print):		Date/Time:		Signature:				
Sample Disposal:			Return to Client:			Lab Disposal:			Received by Laboratory:			Date/Time:			Signature:		

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report. Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

APPENDIX 4
LABORATORY REPORT

TABLE D. SAMPLING ANALYTICAL PARAMETERS FOR THE MONTHLY RESIDENTIAL WELL SAMPLE PROGRAM, THE QUARTERLY MONITORING WELL SAMPLE PROGRAM, AND SURFACE WATER SAMPLING - 2008

Parameter	Analytical Technique	Analytical Method	Project Detection Limit (ppm)
Physical Parameters			
pH	pH Meter	SM 4500 pH-11	
Specific Conductivity	SC Meter	SM 2510-11	
TDS	Gravimetric	SM 2540C	10
TSS	Gravimetric	SM 2540D	10
Common Ions			
Alkalinity	Titrimetric	SM 20203	1
Dissinamate	Titrimetric	SM 20203	1
Sulfate	Turbidimetric	SM 4500 SO ₄ E	1
Chloride	Colorimetric	SM 4500 CL C	1
Calcium	ICP	E200.7	5
Magnesium	ICP	E200.7	5
Sodium	ICP	E200.7	5
Potassium	ICP	E200.7	5
Arsenic and Metals			
Arsenic	ICP	200.7	0.005
	ICP-MS	200.8	(0.002 for residential samples)
Cadmium	ICP	200.7	0.001
	ICP-MS	200.8	
Copper	ICP	200.7	0.004
	ICP-MS	200.8	
Iron	ICP	200.7	0.020
	ICP-MS	200.8	
Manganese	ICP	200.7	0.015
	ICP-MS	200.8	
Lead	ICP	200.7	0.005
	ICP-MS	200.8	
Selenium	ICP	200.7	0.005
	ICP-MS	200.8	
Zinc	ICP	200.7	0.020
	ICP-MS	200.8	
Field Parameters			
SWI	Electric Tape	HP-SOP-10	0.01 ft
Temperature	pH Meter	HP-SOP-20	NA
Dissolved Oxygen (DO)	DO Meter	HP-SOP-22	NA
pH	pH Meter	HP-SOP-24	NA
Specific Conductivity (SC)	SC Meter	HP-SOP-77	NA



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0209-300
Project: RI/FS Long Term Residential Well Monitoring Feb 09
Matrix: Groundwater

Lab ID: H09020112-001
Collection Date: 02/11/09 08:00
Date Received: 02/11/09
Report Date: 02/25/09

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.4	s.u.		0.1		A4500-H B	02/11/09 15:48 / hm			PH_090211B	4	090211A-PH-W
Conductivity	689	umhos/cm		1		A2510 B	02/11/09 15:46 / hm			COND_090211B	7	090211A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/12/09 14:00 / hm			SOLIDS_090212A	33	090212A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	553	mg/L		10		A2540 C	02/12/09 13:27 / hm			SOLIDS_090212B	39	090212A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	130	mg/L		1		A2320 B	02/12/09 13:38 / sl-d			TITTR_090212A	34	090212A-ALK-W
Bicarbonate as HCO3	160	mg/L		1		A2320 B	02/12/09 13:38 / sl-d			TITTR_090212A	34	090212A-ALK-W
Chloride	30	mg/L		1		E300.0	02/18/09 12:34 / hm			IC101-H_090217A	70	R51949
Sulfate	240	mg/L		1		E300.0	02/18/09 12:34 / hm			IC101-H_090217A	70	R51949
METALS, DISSOLVED												
Arsenic	0.003	mg/L		0.002		E200.8	02/20/09 16:14 / eli-b			SUB-B125183	1	B_R125183
Cadmium	ND	mg/L		0.001		E200.8	02/20/09 16:14 / eli-b			SUB-B125183	1	B_R125183
Calcium	98	mg/L		1		E200.7	02/17/09 17:16 / eli-b			SUB-B124997	12	B_R124997
Copper	0.004	mg/L		0.004		E200.8	02/20/09 16:14 / eli-b			SUB-B125183	1	B_R125183
Iron	ND	mg/L		0.02		E200.7	02/17/09 17:16 / eli-b			SUB-B124997	12	B_R124997
Lead	ND	mg/L		0.005		E200.8	02/20/09 16:14 / eli-b			SUB-B125183	1	B_R125183
Magnesium	21	mg/L		1		E200.7	02/17/09 17:16 / eli-b			SUB-B124997	12	B_R124997
Manganese	0.01	mg/L		0.01		E200.7	02/17/09 17:16 / eli-b			SUB-B124997	12	B_R124997
Potassium	6	mg/L		1		E200.7	02/17/09 17:16 / eli-b			SUB-B124997	12	B_R124997
Selenium	0.015	mg/L		0.005		E200.8	02/20/09 16:14 / eli-b			SUB-B125183	1	B_R125183
Sodium	25	mg/L		1		E200.7	02/17/09 17:16 / eli-b			SUB-B124997	12	B_R124997
Zinc	0.04	mg/L		0.02		E200.7	02/17/09 17:16 / eli-b			SUB-B124997	12	B_R124997

Report RL - Analyte reporting limit.
Definitions:

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0209-301
Project: RI/FS Long Term Residential Well Monitoring Feb 09
Matrix: Groundwater

Lab ID: H09020112-002
Collection Date: 02/11/09 08:30
Date Received: 02/11/09
Report Date: 02/25/09

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.3	s.u.		0.1		A4500-H B	02/11/09 15:51 / hm			PH_090211B	5	090211A-PH-W
Conductivity	264	umhos/cm		1		A2510 B	02/11/09 15:48 / hm			COND_090211B	8	090211A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/12/09 14:00 / hm			SOLIDS_090212A	34	090212A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	191	mg/L		10		A2540 C	02/12/09 13:28 / hm			SOLIDS_090212B	40	090212A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	77	mg/L		1		A2320 B	02/12/09 14:00 / sld			TITR_090212A	37	090212A-ALK-W
Bicarbonate as HCO3	94	mg/L		1		A2320 B	02/12/09 14:00 / sld			TITR_090212A	37	090212A-ALK-W
Chloride	5	mg/L		1		E300.0	02/18/09 13:32 / hm			IC101-H_090217A	73	R51949
Sulfate	53	mg/L		1		E300.0	02/18/09 13:32 / hm			IC101-H_090217A	73	R51949
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	02/20/09 16:19 / eli-b			SUB-B125183	2	B_R125183
Cadmium	ND	mg/L		0.001		E200.8	02/20/09 16:19 / eli-b			SUB-B125183	2	B_R125183
Calcium	31	mg/L		1		E200.7	02/17/09 17:28 / eli-b			SUB-B124997	13	B_R124997
Copper	0.023	mg/L		0.004		E200.8	02/20/09 16:19 / eli-b			SUB-B125183	2	B_R125183
Iron	ND	mg/L		0.02		E200.7	02/17/09 17:28 / eli-b			SUB-B124997	13	B_R124997
Lead	ND	mg/L		0.005		E200.8	02/20/09 16:19 / eli-b			SUB-B125183	2	B_R125183
Magnesium	6	mg/L		1		E200.7	02/17/09 17:28 / eli-b			SUB-B124997	13	B_R124997
Manganese	ND	mg/L		0.01		E200.7	02/17/09 17:28 / eli-b			SUB-B124997	13	B_R124997
Potassium	3	mg/L		1		E200.7	02/17/09 17:28 / eli-b			SUB-B124997	13	B_R124997
Selenium	ND	mg/L		0.005		E200.8	02/20/09 16:19 / eli-b			SUB-B125183	2	B_R125183
Sodium	13	mg/L		1		E200.7	02/17/09 17:28 / eli-b			SUB-B124997	13	B_R124997
Zinc	ND	mg/L		0.02		E200.7	02/17/09 17:28 / eli-b			SUB-B124997	13	B_R124997

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0209-302
Project: RI/FS Long Term Residential Well Monitoring Feb 09
Matrix: Groundwater

Lab ID: H09020112-003
Collection Date: 02/11/09 09:00
Date Received: 02/11/09
Report Date: 02/25/09

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.3	s.u.		0.1		A4500-H B	02/11/09 15:54 / hm			PH_090211B 6		090211A-PH-W
Conductivity	262	umhos/cm		1		A2510 B	02/11/09 15:49 / hm			COND_090211B 9		090211A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/12/09 14:01 / hm			SOLIDS_090212A 35		090212A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	190	mg/L		10		A2540 C	02/12/09 13:28 / hm			SOLIDS_090212B 41		090212A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO ₃	79	mg/L		1		A2320 B	02/12/09 14:17 / sid			TITR_090212A 38		090212A-ALK-W
Bicarbonate as HCO ₃	97	mg/L		1		A2320 B	02/12/09 14:17 / sid			TITR_090212A 38		090212A-ALK-W
Chloride	5	mg/L		1		E300.0	02/18/09 13:52 / hm			IC101-H_090217A 74		R51948
Sulfate	53	mg/L		1		E300.0	02/18/09 13:52 / hm			IC101-H_090217A 74		R51948
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 3		B_R125183
Cadmium	ND	mg/L		0.001		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 3		B_R125183
Calcium	31	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 14		B_R124997
Copper	0.022	mg/L		0.004		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 3		B_R125183
Iron	ND	mg/L		0.02		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 14		B_R124997
Lead	ND	mg/L		0.005		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 3		B_R125183
Magnesium	6	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 14		B_R124997
Manganese	ND	mg/L		0.01		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 14		B_R124997
Potassium	3	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 14		B_R124997
Selenium	ND	mg/L		0.005		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 3		B_R125183
Sodium	13	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 14		B_R124997
Zinc	ND	mg/L		0.02		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 14		B_R124997

Report Definitions: RL - Analyte reporting limit

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0209-303
Project: RI/FS Long Term Residential Well Monitoring Feb 09
Matrix: Groundwater

Lab ID: H09020112-004
Collection Date: 02/11/09 11:00
Date Received: 02/11/09
Report Date: 02/25/09

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.2	s.u.		0.1		A4500-H B	02/11/09 15:56 / hm			PH_090211B	7	090211A-PH-W
Conductivity	435	umhos/cm		1		A2510 B	02/11/09 15:50 / hm			COND_090211B	10	090211A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/12/09 14:01 / hm			SOLIDS_090212A	37	090212A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	340	mg/L		10		A2540 C	02/12/09 13:29 / hm			SOLIDS_090212B	43	090212A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	02/12/09 14:21 / sld			TITR_090212A	39	090212A-ALK-W
Bicarbonate as HCO3	150	mg/L		1		A2320 B	02/12/09 14:21 / sld			TITR_090212A	39	090212A-ALK-W
Chloride	7	mg/L		1		E300.0	02/18/09 14:11 / hm			IC101-H_090217A	75	R51949
Sulfate	110	mg/L		1		E300.0	02/18/09 14:11 / hm			IC101-H_090217A	75	R51949
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	02/20/09 16:30 / eli-b			SUB-B125183	4	B_R125183
Cadmium	ND	mg/L		0.001		E200.8	02/20/09 16:30 / eli-b			SUB-B125183	4	B_R125183
Calcium	57	mg/L		1		E200.7	02/17/09 17:43 / eli-b			SUB-B124997	15	B_R124997
Copper	ND	mg/L		0.004		E200.8	02/20/09 16:30 / eli-b			SUB-B125183	4	B_R125183
Iron	ND	mg/L		0.02		E200.7	02/17/09 17:43 / eli-b			SUB-B124997	15	B_R124997
Lead	ND	mg/L		0.005		E200.8	02/20/09 16:30 / eli-b			SUB-B125183	4	B_R125183
Magnesium	12	mg/L		1		E200.7	02/17/09 17:43 / eli-b			SUB-B124997	15	B_R124997
Manganese	ND	mg/L		0.01		E200.7	02/17/09 17:43 / eli-b			SUB-B124997	15	B_R124997
Potassium	5	mg/L		1		E200.7	02/17/09 17:43 / eli-b			SUB-B124997	15	B_R124997
Selenium	ND	mg/L		0.005		E200.8	02/20/09 16:30 / eli-b			SUB-B125183	4	B_R125183
Sodium	17	mg/L		1		E200.7	02/17/09 17:43 / eli-b			SUB-B124997	15	B_R124997
Zinc	0.02	mg/L		0.02		E200.7	02/17/09 17:43 / eli-b			SUB-B124997	15	B_R124997

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0209-304
Project: RI/FS Long Term Residential Well Monitoring Feb 09
Matrix: Groundwater

Lab ID: H09020112-005
Collection Date: 02/11/09 11:30
Date Received: 02/11/09
Report Date: 02/25/09

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	5.8	s.u.		0.1		A4500-H B	02/11/09 16:02 / hm			PH_090211B 8		090211A-PH-W
Conductivity	1	umhos/cm		1		A2510 B	02/11/09 15:52 / hm			COND_090211B 11		090211A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/12/09 14:02 / hm			SOLIDS_090212A 38		090212A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	02/12/09 13:30 / hm			SOLIDS_090212B 44		090212A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	ND	mg/L		1		A2320 B	02/12/09 14:25 / sld			TITTR_090212A 40		090212A-ALK-W
Bicarbonate as HCO3	ND	mg/L		1		A2320 B	02/12/09 14:25 / sld			TITTR_090212A 40		090212A-ALK-W
Chloride	ND	mg/L		1		E300.0	02/18/09 15:09 / hm			IC101-H_090217A 78		R51949
Sulfate	ND	mg/L		1		E300.0	02/18/09 15:09 / hm			IC101-H_090217A 78		R51949
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	02/20/09 16:35 / eli-b			SUB-B125183 5		B_R125183
Cadmium	ND	mg/L		0.001		E200.8	02/20/09 16:35 / eli-b			SUB-B125183 5		B_R125183
Calcium	ND	mg/L		1		E200.7	02/17/09 17:47 / eli-b			SUB-B124997 16		B_R124997
Copper	ND	mg/L		0.004		E200.8	02/20/09 16:35 / eli-b			SUB-B125183 5		B_R125183
Iron	ND	mg/L		0.02		E200.7	02/17/09 17:47 / eli-b			SUB-B124997 16		B_R124997
Lead	ND	mg/L		0.005		E200.8	02/20/09 16:35 / eli-b			SUB-B125183 5		B_R125183
Magnesium	ND	mg/L		1		E200.7	02/17/09 17:47 / eli-b			SUB-B124997 16		B_R124997
Manganese	ND	mg/L		0.01		E200.7	02/17/09 17:47 / eli-b			SUB-B124997 16		B_R124997
Potassium	ND	mg/L		1		E200.7	02/17/09 17:47 / eli-b			SUB-B124997 16		B_R124997
Selenium	ND	mg/L		0.005		E200.8	02/20/09 16:35 / eli-b			SUB-B125183 5		B_R125183
Sodium	ND	mg/L		1		E200.7	02/17/09 17:47 / eli-b			SUB-B124997 16		B_R124997
Zinc	ND	mg/L		0.02		E200.7	02/17/09 17:47 / eli-b			SUB-B124997 16		B_R124997

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

Work Order: H09020112

BatchID: 090211A-COND-PROBE

Project: RI/FS Long Term Residential Well Monitorin

Run ID: Run Order: COND_090211B: 1	SampType: Laboratory Control Sample				Sample ID: LCS1_090211A			Method: A2510 B			
Analysis Date: 02/11/09 15:31	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	1410	1.0	1412		100	90	110				
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A											

Run ID: Run Order: COND_090211B: 6	SampType: Sample Duplicate				Sample ID: H09020103-001ADUP			Method: A2510 B			
Analysis Date: 02/11/09 16:44	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	492	1.0						493.1	0.3	10	
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A											

Run ID: Run Order: COND_090211B: 12	SampType: Continuing Calibration Verification Standard				Sample ID: CCV1_090211A			Method: A2510 B			
Analysis Date: 02/11/09 15:53	Units: umhos/cm				Prep Info: Prep Date:			Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	717	1.0	718		100	90	110				
Associated samples:											

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD

A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

Work Order: H09020112

Project: RI/FS Long Term Residential Well Monitorin

BatchID: 090211A-PH-W

Run ID :Run Order: PH_090211B: 1		SampType: Laboratory Control Sample				Sample ID: LCS1_090211A				Method: A4500-H B		
Analysis Date: 02/11/09 15:41		Units: s.u.				Prep Info:		Prep Date:		Prep Method:		
Analytes :	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	7.03	0.10	7		100	99	101					

Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID :Run Order: PH_090211B: 3		SampType: Sample Duplicate				Sample ID: H09020103-001ADUP				Method: A4500-H B		
Analysis Date: 02/11/09 15:46		Units: s.u.				Prep Info:		Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
pH	7.47	0.10						7.43	0.5	2		

Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID :Run Order: PH_090211B: 9			SampType: Continuing Calibration Verification Standard					Sample ID: CCV1_090211A		Method: A4500-H B			
Analysis Date: 02/11/09 16:06			Units: s.u.		Prep Info:		Prep Date:		Prep Method:				
Analytes 1			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH			10.0	0.10	10		100	99	101				

Associated samples:

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD

A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H09020112
Project: RI/FS Long Term Residential Well Monitorin

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

BatchID: 090212A-ALK-W

Run ID: Run Order: TITTR_090212A: 1 SampType: Method Blank Sample ID: MBLK1_090212A Method: A2320 B
Analysis Date: 02/12/09 08:34 Units: mg/L Prep Info: Prep Date: Prep Method:
Analytes: Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Alkalinity, Total as CaCO3 ND 1
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID: Run Order: TITTR_090212A: 2 SampType: Laboratory Control Sample Sample ID: LCS1_090212A Method: A2320 B
Analysis Date: 02/12/09 08:38 Units: mg/L Prep Info: Prep Date: Prep Method:
Analytes: Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Alkalinity, Total as CaCO3 600 4.0 600 100 90 110
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID: Run Order: TITTR_090212A: 29 SampType: Continuing Calibration Verification Standard Sample ID: CCV2_090212A Method: A2320 B
Analysis Date: 02/12/09 11:33 Units: mg/L Prep Info: Prep Date: Prep Method:
Analytes: 1 Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Alkalinity, Total as CaCO3 1100 4.0 1000 107 90 110
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID: Run Order: TITTR_090212A: 35 SampType: Sample Matrix Spike Sample ID: H09020112-001AMS Method: A2320 B
Analysis Date: 02/12/09 13:47 Units: mg/L Prep Info: Prep Date: Prep Method:
Analytes: 1 Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Alkalinity, Total as CaCO3 710 4.0 600 125.6 98 90 110
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID: Run Order: TITTR_090212A: 36 SampType: Sample Matrix Spike Duplicate Sample ID: H09020112-001AMSD Method: A2320 B
Analysis Date: 02/12/09 13:52 Units: mg/L Prep Info: Prep Date: Prep Method:
Analytes: 1 Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Alkalinity, Total as CaCO3 710 4.0 600 125.6 97 90 110 712.5 0.4 20
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

Work Order: H09020112

BatchID: 090212A-ALK-W

Project: RI/FS Long Term Residential Well Monitorin

Run ID: Run Order: TITTR_090212A: 41	SampType: Sample Duplicate				Sample ID: H09020112-005ADUP				Method: A2320 B		
Analysis Date: 02/12/09 14:26	Units: mg/L		Prep Info: Prep Date				Prep Method:				
Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	4.0								20	
Bicarbonate as HCO3	ND	4.0								20	

Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD

A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

Work Order: H09020112

BatchID: 090212A-SLDS-TDS-W

Project: RI/FS Long Term Residential Well Monitorin

Run ID :Run Order: SOLIDS_090212B: 1				SampType: Method Blank				Sample ID: MBLK1_090212A				Method: A2540 C													
Analysis Date: 02/12/09 13:13				Units: mg/L				Prep Info: Prep Date:				Prep Method:													
Analytes: 1				Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Solids, Total Dissolved TDS @ 180 C				4		1.0																			
Associated samples: H09020112-001A: H09020112-002A: H09020112-003A: H09020112-004A: H09020112-005A																									

Run ID	Run Order: SOLIDS_090212B: 2	SampType	Laboratory Control Sample	Sample ID: LCS1_090212A	Method: A2540 C
Analysis Date: 02/12/09 13:13	Units: mg/L	Prep Info:	Prep Date:	Prep Method:	
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Solids, Total Dissolved TDS @ 180 C	996	10	1000	4	99 90 110
Associated samples: H09020112-001A: H09020112-002A: H09020112-003A: H09020112-004A: H09020112-005A					

Run ID :Run Order: SOLIDS_090212B: 28		SampType: Sample Matrix Spike				Sample ID: H09020089-007AMS				Method: A2540 C		
Analysis Date: 02/12/09 13:23		Units: mg/L				Prep Info: Prep Date:		Prep Method:				
Analytes 1		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C		2000	10	2000	8	100	80	120				
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A												

Run ID :Run Order: SOLIDS_090212B: 29		SampType: Sample Matrix Spike Duplicate				Sample ID: H09020088-007AMSD				Method: A2540 C	
Analysis Date: 02/12/09 13:24		Units: mg/L				Prep Info: Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1990	10	2000	8	99	80	120	2000	0.3	10	
Associated samples: H09020112-001A: H09020112-002A: H09020112-003A: H09020112-004A: H09020112-005A											

Run ID :Run Order: SOLIDS_090212B: 42		SampType: Sample Duplicate			Sample ID: H09020112-003ADUP				Method: A2540 C		
Analysis Date: 02/12/09 13:28		Units: mg/L			Prep Info:		Prep Date:		Prep Method:		
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	190	10						190		20	
Associated samples: H09020112-001A: H09020112-002A: H09020112-003A: H09020112-004A: H09020112-005A											

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

Work Order: H09020112

BatchID: 090212A-SLDS-TSS-W

Project: RI/FS Long Term Residential Well Monitorin

Run ID	Run Order	SOLIDS_090212A: 1				SampType	Method	Blank	Sample ID	MBLK1_090212A			Method	A2540 D	
Analysis Date:		02/12/09 13:42		Units	mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Solids, Total Suspended TSS @ 105 C		ND	1												
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A															

Run ID :Run Order: SOLIDS_090212A: 2	SampType: Laboratory Control Sample				Sample ID: LCS1_090212A				Method: A2540 D		
Analysis Date: 02/12/09 13:42	Units: mg/L		Prep Info:			Prep Date:		Prep Method:			
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	1950	10	2000		98	70	130				
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A											

Run ID:Run Order: SOLIDS_090212A: 36	SampType: Sample Duplicate				Sample ID: H09020112-003ADUP				Method: A2540 D		
Analysis Date: 02/12/09 14:01	Units: mg/L				Prep Info: Prep Date:		Prep Method:				
Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	10						2		10	
Associated samples: H09020112-001A: H09020112-002A: H09020112-003A: H09020112-004A: H09020112-005A											

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

Work Order: H09020112

BatchID: B_R124997

Project: RI/FS Long Term Residential Well Monitorin

Run ID :Run Order: SUB-B124997: 2	SampType: Method Blank				Sample ID: MB-TJADIS090217A				Method: E200.7			
Analysis Date: 02/17/09 16:04	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes ?	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	ND	0.02										
Iron	ND	0.005										
Magnesium	ND	0.1										
Manganese	ND	0.001										
Potassium	ND	0.07										
Sodium	ND	0.04										
Zinc	ND	0.001										

Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Run ID :Run Order: SUB-B124997: 3	SampType: Laboratory Fortified Blank				Sample ID: LFB-TJADIS090217A				Method: E200.7			
Analysis Date: 02/17/09 16:08	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes ?	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	48.9	1.0	50		98	85	115					
Iron	4.93	0.030	5		99	85	115					
Magnesium	48.9	1.0	50		98	85	115					
Manganese	5.00	0.010	5		100	85	115					
Potassium	49.9	1.0	50		100	85	115					
Sodium	50.2	1.0	50		100	85	115					
Zinc	1.03	0.010	1		103	85	115					

Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Run ID :Run Order: SUB-B124997: 4	SampType: Continuing Calibration Verification Standard				Sample ID: ICV				Method: E200.7			
Analysis Date: 02/17/09 18:18	Units: mg/L				Prep Info: Prep Date:				Prep Method:			
Analytes ?	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Calcium	24.8	1.0	25		99	95	105					
Iron	2.46	0.030	2.5		98	95	105					
Magnesium	23.8	1.0	25		95	95	105					
Manganese	2.49	0.010	2.5		100	95	105					
Potassium	25.6	1.0	25		102	95	105					
Sodium	25.0	1.0	25		100	95	105					
Zinc	2.60	0.010	2.5		104	95	105					

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

Work Order: H09020112

BatchID: B_R124997

Project: RI/FS Long Term Residential Well Monitorin

Run ID :Run Order: SUB-B124997: 4 SampType: Continuing Calibration Verification Standard Sample ID: ICV Method: E200.7
Analysis Date: 02/17/09 18:18 Units: mg/L Prep Info: Prep Date: Prep Method:
Analytes: Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Run ID :Run Order: SUB-B124997: 17 SampType: Sample Matrix Spike Sample ID: H09020112-001B Method: E200.7
Analysis Date: 02/17/09 17:20 Units: mg/L Prep Info: Prep Date: Prep Method:
Analytes: Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Calcium 146 1.0 50 97.64 96 70 130
Iron 4.99 0.030 5 0.01929 99 70 130
Magnesium 72.6 1.0 50 20.91 103 70 130
Manganese 5.06 0.010 5 0.01358 101 70 130
Potassium 56.1 1.0 50 5.873 100 70 130
Sodium 75.7 1.0 50 24.95 102 70 130
Zinc 1.11 0.010 1 0.03672 107 70 130
Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Run ID :Run Order: SUB-B124997: 18 SampType: Sample Matrix Spike Duplicate Sample ID: H09020112-001B Method: E200.7
Analysis Date: 02/17/09 17:24 Units: mg/L Prep Info: Prep Date: Prep Method:
Analytes: Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Calcium 147 1.0 50 97.64 100 70 130 145.8 1.1 20
Iron 4.84 0.030 5 0.01929 96 70 130 4.994 3.1 20
Magnesium 73.1 1.0 50 20.91 104 70 130 72.58 0.7 20
Manganese 4.91 0.010 5 0.01358 98 70 130 5.057 3 20
Potassium 56.3 1.0 50 5.873 101 70 130 56.06 0.4 20
Sodium 77.0 1.0 50 24.95 104 70 130 75.72 1.7 20
Zinc 1.07 0.010 1 0.03672 103 70 130 1.108 3.5 20
Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Run ID :Run Order: SUB-B124997: 19 SampType: Sample Matrix Spike Sample ID: B09021117-001BMS2 Method: E200.7
Analysis Date: 02/17/09 18:15 Units: mg/L Prep Info: Prep Date: Prep Method:
Analytes: Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Calcium 277 1.1 250 31.96 98 70 130
Iron 24.6 0.030 25 0.04683 98 70 130

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

Work Order: H09020112

BatchID: B_R124997

Project: RI/FS Long Term Residential Well Monitorin

Run ID:Run Order		SUB-B124997: 19		SampType		Sample Matrix Spike		Sample ID: B09021117-001BMS2				Method: E200.7	
Analysis Date: 02/17/09 18:15		Units: mg/L				Prep Info:		Prep Date		Prep Method			
Analytes		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Magnesium		263	1.0	250	12.39	100	70	130					
Manganese		25.1	0.010	25	0.01871	100	70	130					
Potassium		284	1.0	250	38.88	98	70	130					
Sodium		963	1.0	250	736.2	91	70	130					
Zinc		5.32	0.010	5		106	70	130					

Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Run ID :Run Order: SUB-B124997: 20		SampType Sample Matrix Spike Duplicate				Sample ID B09021117-001BMSD2				Method: E200.7		
Analysis Date: 02/17/09 18:26		Units: mg/L				Prep Info: Prep Date:		Prep Method:				
Analytes		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium		277	1.1	250	31.96	98	70	130	276.9	0	20	
Iron		24.9	0.030	25	0.04683	100	70	130	24.58	1.4	20	
Magnesium		263	1.0	250	12.39	100	70	130	263.2	0.1	20	
Manganese		25.3	0.010	25	0.01871	101	70	130	25.14	0.6	20	
Potassium		288	1.0	250	38.88	99	70	130	283.6	1.4	20	
Sodium		941	1.0	250	736.2	82	70	130	963.3	2.4	20	
Zinc		5.36	0.010	5		107	70	130	5.316	0.9	20	

Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD

A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

ANALYTICAL QC SUMMARY REPORT

Date: 25-Feb-09

Work Order: H09020112

BatchID: B_R125183

Project: RI/FS Long Term Residential Well Monitorin

Run ID :Run Order: SUB-B125183: 6		SampType: Initial Calibration Verification Standard			Sample ID: QCS- MEME080514B,080514A, 080225B			Method: E200.8			
Analysis Date: 02/20/09 11:06		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes: 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0050	0.05		98	90	110				
Cadmium	0.026	0.0010	0.025		102	90	110				
Copper	0.052	0.010	0.05		104	90	110				
Lead	0.049	0.010	0.05		99	90	110				
Selenium	0.051	0.0050	0.05		101	90	110				

Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Run ID :Run Order: SUB-B125183: 7		SampType: Method Blank			Sample ID: LRB			Method: E200.8			
Analysis Date: 02/20/09 11:32		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes: 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	5E-05										
Cadmium	ND	3E-06									
Copper	ND	7E-05									
Lead	ND	3E-06									
Selenium	ND	0.0001									

Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Run ID :Run Order: SUB-B125183: 8		SampType: Laboratory Fortified Blank			Sample ID: LFB			Method: E200.8			
Analysis Date: 02/20/09 11:37		Units: mg/L		Prep Info:		Prep Date:		Prep Method:			
Analytes: 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.052	0.0050	0.05	0.0000466	104	85	115				
Cadmium	0.052	0.0010	0.05		105	85	115				
Copper	0.055	0.010	0.05		110	85	115				
Lead	0.052	0.010	0.05		104	85	115				
Selenium	0.053	0.0050	0.05		106	85	115				

Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike Recovery outside accepted recovery limits

N - Analyte concentration was not sufficiently high to calculate RPD

J - Analyte detected below quantitation limits

R - RPD outside accepted recovery limits

A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC

Work Order: H09020112

Project: RI/FS Long Term Residential Well Monitorin

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R125183

Date: 25-Feb-09

Run ID	Run Order	SUB-B125183: 9	SampType: Sample Matrix Spike	Units: mg/L	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	Prep Date:	Prep Info:	Prep Method	Method: E200.8
Analysis Date:	02/20/09	15:03														
Analytes																
Arsenic				0.056	0.0010	0.05	0.002772		106	70	130					
Cadmium				0.051	0.0010	0.05			102	70	130					
Copper				0.055	0.010	0.05	0.0008908		107	70	130					
Lead				0.052	0.0010	0.05	0.0002834		104	70	130					
Selenium				0.052	0.0050	0.05			105	70	130					
Associated samples H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B																

Run ID	Run Order	SUB-B125183: 10	SampType: Sample Matrix Spike Duplicate	Units: mg/L	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	Prep Date:	Prep Info:	Prep Method	Method: E200.8
Analysis Date:	02/20/09	15:08														
Analytes																
Arsenic				0.056	0.0010	0.05	0.002772		107	70	130	0.05598			0.9	20
Cadmium				0.051	0.0010	0.05			102	70	130	0.05087			0.3	20
Copper				0.055	0.010	0.05	0.0008908		109	70	130	0.05462			1	20
Lead				0.053	0.0010	0.05	0.0002834		105	70	130	0.05224			0.9	20
Selenium				0.053	0.0050	0.05			107	70	130	0.05239			2	20
Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B																

Run ID	Run Order	SUB-B125183: 11	SampType: Sample Matrix Spike	Units: mg/L	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	Prep Date:	Prep Info:	Prep Method	Method: E200.8
Analysis Date:	02/20/09	17:42														
Analytes																
Arsenic				0.056	0.0010	0.05	0.004056		104	70	130					
Cadmium				0.052	0.0010	0.05			103	70	130					
Copper				0.20	0.010	0.05	0.1439		107	70	130					
Lead				0.053	0.0010	0.05	0.0009658		103	70	130					
Selenium				0.051	0.0050	0.05			101	70	130					
Associated samples H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B																

Run ID	Run Order	SUB-B125183: 12	SampType: Sample Matrix Spike Duplicate	Units: mg/L	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	Prep Date:	Prep Info:	Prep Method	Method: E200.8
Analysis Date:	02/20/09	17:47														
Analytes																
Arsenic				0.057	0.0010	0.05	0.004056		107	70	130	0.05601			2.5	20

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. • 3161 E Lyndale (59604) • PO Box 5688 • Helena, MT 59601
Toll Free 877.472.0711 • 406.442.0711 • FAX 406.442.0712 • helena@energylab.com

Date: 25-Feb-09

ANALYTICAL QC SUMMARY REPORT

Client: Asarco LLC

Work Order: H09020112

Project: RI/FS Long Term Residential Well Monitorin

BatchID: B_R125183

Run ID :Run Order. SUB-B125183; 12			Sample Type Sample Matrix Spike Duplicate			Sample ID B09021170-005AMSD		Method: E200.8			
Analysis Date. 02/20/09 17:47			Units: mg/L			Prep Info: Prep Date.		Prep Method:			
Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.052	0.0010	0.05		103	70	130	0.05152	0.3	20	
Copper	0.20	0.010	0.05	0.1439	110	70	130	0.1972	0.9	20	
Lead	0.053	0.0010	0.05	0.0009658	104	70	130	0.05258	0.7	20	
Selenium	0.053	0.0050	0.05		106	70	130	0.05071	4.3	20	
Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B											

Run ID	Run Order	SUB-B125183; 16	Samp Type	Initial Calibration	Verification Standard	Sample ID	QCS- ME080514B,080514A,080 226B	Method	E200.8			
Analysis Date	02/20/09 19:05		Units	mg/L		Prep Info:	Prep Date	Prep Method				
Analytes	\$	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		0.049	0.0050	0.05		98	90	110				
Cadmium		0.026	0.0010	0.025		102	90	110				
Copper		0.051	0.010	0.05		102	90	110				
Lead		0.050	0.010	0.05		100	90	110				
Selenium		0.050	0.0050	0.05		101	90	110				
Associated samples: H09020112-001B; H09020112-002B; H09020112-003B; H09020112-004B; H09020112-005B												

Qualifiers: ND - Not Detected at the Reporting Limit
S - Spike Recovery outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Date: 25-Feb-09

ANALYTICAL QC SUMMARY REPORT

Client: Asarco LLC

Work Order: H09020112

Project: RI/FS Long Term Residential Well Monitorin

BatchID: R51949

Run ID	Run Order	IC101-H_080217A: 12	Sample Type: Initial Calibration Verification Standard				Sample ID: ICV		Method: E300.0				
Analysis Date	02/17/09 17:47		Units mg/L		Prep Info:		Prep Date:		Prep Method				
Analytes			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride	24	1.0	25	58	90	110						
Sulfate	99	1.0	100	99	90	110						

Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID :Run Order: IC101-H_090217A: 13	Sample Type: Laboratory Control Sample				Sample ID: LCS		Method: E300.0				
Analysis Date: 02/17/09 18:07	Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride	95	1.0	87.47	108	90	110						
Sulfate	26	1.0	28.53	93	90	110						

Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID :Run Order: IC101-H_090217A: 14	Samp Type: Laboratory Fortified Blank				Sample ID: LFB		Method: E300.0				
Analysis Date: 02/17/09 18:26	Units: mg/L		Prep Info:		Prep Date:		Prep Method:				
Analytes : 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride	9.2	1.0	10	92	90	110						
Sulfate	37	1.0	40	92	90	110						

Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID :Run Order: IC101-H_090217A: 15	Sample Type: Method Blank		Sample ID: MBLK		Method: E300.0						
Analysis Date: 02/17/09 18:46	Units: mg/L	Prep Info:		Prep Date:	Prep Method:						
Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD RefVal	%RPD	RPDLimit	Qual

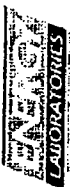
Chloride	ND											
Sulfate	ND											

Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A

Run ID	Run Order	IC101-H_090217A: 58	SampType Continuing Calibration Verification Standard				Sample ID	CCV	Method	E300.0			
Analysis Date	02/18/09 08:41		Units:	mg/L	Prep Info:		Prep Date	Prep Method:					
Analytes	2		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD RefVal	%RPD	RPDLimit	Qual

Chloride	25	1.0	25	100	90	110						
Sulfate	100	1.0	100	102	90	110						

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Date: 25-Feb-09

ANALYTICAL QC SUMMARY REPORT

Client: Asarco LLC

Work Order: H09020112

Project: RI/FS Long Term Residential Well Monitorin

BatchID: R51949

Run ID	Run Order	IC101-H_090217A: 58	SampType Continuing Calibration Verification Standard Sample ID: CCV										Method: E300.0	
Analysis Date	02/18/09 08:41		Units	mg/L	Prep Info:		Prep Date:		Prep Method:					
Analyses			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Associated samples: H09020112-001A														

Run ID		Run Order		IC101-H_090217A: 71		SampType		Continuing Calibration Verification Standard		Sample ID		CCV		Method		E300.0											
Analysis Date		02/18/09 12:53				Units:		mg/L		Prep Info:		Prep Date:		Prep Method													
Analyses		2				Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Chloride						25		1.0		25				100		90		110									
Sulfate						100		1.0		100				101		90		110									
Associated samples: H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A																											

Run ID : Run Order: IC101-H_090217A: 76		SampType		Sample Matrix Spike		Sample ID: H09020112-004A MS		Method: E300.0	
Analysis Date: 02/18/09 14:31		Units: mg/L				Prep Info:		Prep Date:	
Analyses 2		Result		PQL		SPK value		SPK RefVal	
		33		1.0		25		6.97	
		220		1.0		100		114	
						105		90	
						107		90	
						110		110	
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A									

Run ID	Run Order	IC101-H_090217A: 77	SampType:	Sample Matrix Spike Duplicate	Sample ID:	H09020112-004A MSD	Method:	E300.0					
Analysis Date:	02/18/09 14:50		Units:	mg/L	Prep Info:	Prep Date:	Prep Method:						
Analyses 2			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride			34	1.0	25	6.97	109	90	110	33.23	3.2	20	
Sulfate			220	1.0	100	114	109	90	110	221.1	1.1	20	
Associated samples: H09020112-001A; H09020112-002A; H09020112-003A; H09020112-004A; H09020112-005A													

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

Energy Laboratories Inc

Workorder Receipt Checklist



H09020112

Asarco LLC

Login completed by: Roxanne L. Tubbs

Date and Time Received: 2/11/2009 3:13 PM

Reviewed by: Amanda Blackburn

Received by: rlt

Reviewed Date: 2/17/2009 11:27:00 AM

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature:	3.6°C		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Contact and Corrective Action Comments:

None



March 2, 2009

David Jensen
P. O. Box 1021
401 Gail Street
East Helena, Montana 59635

Dear Mr. Jensen:

Enclosed are the analytical results for the water samples (both original and duplicate) that were collected from your ground water well on February 11, 2009. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents sampled are better than the Montana Human Health Standards and Federal Maximum Concentration Limits (MCL)/Action Levels. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jon Nickel".

Jon Nickel

Enclosure

Cc: Tom Aldrich



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0209-300
Project: RI/FS Long Term Residential Well Monitoring Feb 09
Matrix: Groundwater

Jensen Residence
401 Gail Street

Lab ID: H09020112-001
Collection Date: 02/11/09 08:00
Date Received: 02/11/09
Report Date: 02/25/09

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.4	s.u.		0.1		A4500-H B	02/11/09 15:48 / hm			PH_090211B : 4		090211A-PH-W
Conductivity	699	umhos/cm		1		A2510 B	02/11/09 15:46 / hm			COND_090211B : 7		090211A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/12/09 14:00 / hm			SOLIDS_090212A : 33		090212A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	553	mg/L		10		A2540 C	02/12/09 13:27 / hm			SOLIDS_090212B : 39		090212A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	130	mg/L		1		A2320 B	02/12/09 13:38 / sld			TITR_090212A : 34		090212A-ALK-W
Bicarbonate as HCO3	150	mg/L		1		A2320 B	02/12/09 13:38 / sld			TITR_090212A : 34		090212A-ALK-W
Chloride	30	mg/L		1		E300.0	02/18/09 12:34 / hm			IC101-H_090217A : 70		R51949
Sulfate	240	mg/L		1		E300.0	02/18/09 12:34 / hm			IC101-H_090217A : 70		R51949
METALS, DISSOLVED												
Arsenic	0.003	mg/L		0.002		E200.8	02/20/09 16:14 / eli-b			SUB-B125183 : 1		B_R125183
Cadmium	ND	mg/L		0.001		E200.8	02/20/09 16:14 / eli-b			SUB-B125183 : 1		B_R125183
Calcium	98	mg/L		1		E200.7	02/17/09 17:16 / eli-b			SUB-B124997 : 12		B_R124997
Copper	0.004	mg/L		0.004		E200.8	02/20/09 16:14 / eli-b			SUB-B125183 : 1		B_R125183
Iron	ND	mg/L		0.02		E200.7	02/17/09 17:16 / eli-b			SUB-B124997 : 12		B_R124997
Lead	ND	mg/L		0.005		E200.8	02/20/09 16:14 / eli-b			SUB-B125183 : 1		B_R125183
Magnesium	21	mg/L		1		E200.7	02/17/09 17:16 / eli-b			SUB-B124997 : 12		B_R124997
Manganese	0.01	mg/L		0.01		E200.7	02/17/09 17:16 / eli-b			SUB-B124997 : 12		B_R124997
Potassium	6	mg/L		1		E200.7	02/17/09 17:16 / eli-b			SUB-B124997 : 12		B_R124997
Selenium	0.015	mg/L		0.005		E200.8	02/20/09 16:14 / eli-b			SUB-B125183 : 1		B_R125183
Sodium	25	mg/L		1		E200.7	02/17/09 17:16 / eli-b			SUB-B124997 : 12		B_R124997
Zinc	0.04	mg/L		0.02		E200.7	02/17/09 17:16 / eli-b			SUB-B124997 : 12		B_R124997

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



March 2, 2009

John Simac
2540 Wylie Drive
P. O. Box 59
East Helena, Montana 59635

Dear Mr. Simac:

Thank you for allowing me to sample your domestic groundwater well supply on February 11, 2009. I have enclosed the analytical results for the water samples that were collected from your wells located at 2540 Wylie Drive (East Helena). All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of both wells is good with near neutral pH and low levels of total dissolved solids and metals. The water quality of the well is better than the Montana Human Health Standards and Federal Maximum Contaminant Level (MCL)/Action Levels listed on the attached table.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Enclosure

Cc: Tom Aldrich
Bob Miller



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0209-302
Project: RI/FS Long Term Residential Well Monitoring Feb 09 Foley Residence (Duplicate)
Matrix: Groundwater 203 Gail Street

Lab ID: H09020112-003
Collection Date: 02/11/09 09:00
Date Received: 02/11/09
Report Date: 02/25/09

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.3	s.u.		0.1		A4500-H B	02/11/09 15:54 / hm			PH_090211B : 6		090211A-PH-W
Conductivity	262	umhos/cm		1		A2510 B	02/11/09 15:49 / hm			COND_090211B : 9		090211A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/12/09 14:01 / hm			SOLIDS_090212A : 35		090212A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	190	mg/L		10		A2540 C	02/12/09 13:28 / hm			SOLIDS_090212B : 41		090212A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO ₃	79	mg/L		1		A2320 B	02/12/09 14:17 / slt			TITTR_090212A : 38		090212A-ALK-W
Bicarbonate as HCO ₃	97	mg/L		1		A2320 B	02/12/09 14:17 / slt			TITTR_090212A : 38		090212A-ALK-W
Chloride	5	mg/L		1		E300.0	02/18/09 13:52 / hm			IC101-H_090217A : 74		R51949
Sulfate	53	mg/L		1		E300.0	02/18/09 13:52 / hm			IC101-H_090217A : 74		R51949
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Cadmium	ND	mg/L		0.001		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Calcium	31	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Copper	0.022	mg/L		0.004		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Iron	ND	mg/L		0.02		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Lead	ND	mg/L		0.005		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Magnesium	6	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Manganese	ND	mg/L		0.01		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Potassium	3	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Selenium	ND	mg/L		0.005		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Sodium	13	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Zinc	ND	mg/L		0.02		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



March 2, 2009

Pat Foley
203 Gail Street
P. O. Box 1551
East Helena, Montana 59635

Dear Mr. Foley:

Enclosed are the analytical results for the water samples that were collected from the 203 Gail Street ground water well on February 11, 2009. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents sampled are better than the Montana Human Health Standards and Federal Maximum Contaminant Level (MCL)/Action Levels. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

A handwritten signature in cursive script that reads "Jon Nickel".
Jon Nickel

Enclosure

Cc: Tom Aldrich



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0209-301
Project: RI/FS Long Term Residential Well Monitoring Feb 09
Matrix: Groundwater

Foley Residence (Original)
203 Gail Street

Lab ID: H09020112-002
Collection Date: 02/11/09 08:30
Date Received: 02/11/09
Report Date: 02/25/09

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.3	s.u.		0.1		A4500-H B	02/11/09 15:51 / hm			PH_090211B : 5		090211A-PH-W
Conductivity	264	umhos/cm		1		A2510 B	02/11/09 15:48 / hm			COND_090211B : 8		090211A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/12/09 14:00 / hm			SOLIDS_090212A : 34		090212A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	191	mg/L		10		A2540 C	02/12/09 13:28 / hm			SOLIDS_090212B : 40		090212A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	77	mg/L		1		A2320 B	02/12/09 14:00 / sld			TITTR_090212A : 37		090212A-ALK-W
Bicarbonate as HCO3	94	mg/L		1		A2320 B	02/12/09 14:00 / sld			TITTR_090212A : 37		090212A-ALK-W
Chloride	5	mg/L		1		E300.0	02/18/09 13:32 / hm			IC101-H_090217A : 73		R51949
Sulfate	53	mg/L		1		E300.0	02/18/09 13:32 / hm			IC101-H_090217A : 73		R51949
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	02/20/09 16:19 / eli-b			SUB-B125183 : 2		B_R125183
Cadmium	ND	mg/L		0.001		E200.8	02/20/09 16:19 / eli-b			SUB-B125183 : 2		B_R125183
Calcium	31	mg/L		1		E200.7	02/17/09 17:28 / eli-b			SUB-B124997 : 13		B_R124997
Copper	0.023	mg/L		0.004		E200.8	02/20/09 16:19 / eli-b			SUB-B125183 : 2		B_R125183
Iron	ND	mg/L		0.02		E200.7	02/17/09 17:28 / eli-b			SUB-B124997 : 13		B_R124997
Lead	ND	mg/L		0.005		E200.8	02/20/09 16:19 / eli-b			SUB-B125183 : 2		B_R125183
Magnesium	6	mg/L		1		E200.7	02/17/09 17:28 / eli-b			SUB-B124997 : 13		B_R124997
Manganese	ND	mg/L		0.01		E200.7	02/17/09 17:28 / eli-b			SUB-B124997 : 13		B_R124997
Potassium	3	mg/L		1		E200.7	02/17/09 17:28 / eli-b			SUB-B124997 : 13		B_R124997
Selenium	ND	mg/L		0.005		E200.8	02/20/09 16:19 / eli-b			SUB-B125183 : 2		B_R125183
Sodium	13	mg/L		1		E200.7	02/17/09 17:28 / eli-b			SUB-B124997 : 13		B_R124997
Zinc	ND	mg/L		0.02		E200.7	02/17/09 17:28 / eli-b			SUB-B124997 : 13		B_R124997

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.



ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0209-302

Project: RI/FS Long Term Residential Well Monitoring Feb 09
Matrix: Groundwater

Foley Residence (Duplicate)
203 Gail Street

Lab ID: H09020112-003
Collection Date: 02/11/09 09:00
Date Received: 02/11/09
Report Date: 02/25/09

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.3	s.u.		0.1		A4500-H B	02/11/09 15:54 / hm			PH_090211B : 6		090211A-PH-W
Conductivity	262	umhos/cm		1		A2510 B	02/11/09 15:49 / hm			COND_090211B : 9		090211A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	02/12/09 14:01 / hm			SOLIDS_090212A : 35		090212A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	190	mg/L		10		A2540 C	02/12/09 13:28 / hm			SOLIDS_090212B : 41		090212A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO ₃	79	mg/L		1		A2320 B	02/12/09 14:17 / sld			TITR_090212A : 38		090212A-ALK-W
Bicarbonate as HCO ₃	97	mg/L		1		A2320 B	02/12/09 14:17 / sld			TITR_090212A : 38		090212A-ALK-W
Chloride	5	mg/L		1		E300.0	02/18/09 13:52 / hm			IC101-H_090217A : 74		R51949
Sulfate	53	mg/L		1		E300.0	02/18/09 13:52 / hm			IC101-H_090217A : 74		R51949
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Cadmium	ND	mg/L		0.001		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Calcium	31	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Copper	0.022	mg/L		0.004		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Iron	ND	mg/L		0.02		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Lead	ND	mg/L		0.005		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Magnesium	6	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Manganese	ND	mg/L		0.01		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Potassium	3	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Selenium	ND	mg/L		0.005		E200.8	02/20/09 16:25 / eli-b			SUB-B125183 : 3		B_R125183
Sodium	13	mg/L		1		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997
Zinc	ND	mg/L		0.02		E200.7	02/17/09 17:39 / eli-b			SUB-B124997 : 14		B_R124997

Report Definitions: RL - Analyte reporting limit.

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.